



CENTRAL CALIFORNIA AIR QUALITY RESEARCH

# How Science is Charting a Path to Cleaner Air.

Wednesday, May 17, 2006

Piccadilly Inn, University  
4961 N. Cedar Avenue  
Fresno, California



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# How Science is Charting a Path to Cleaner Air.

**Policy Implications  
District Perspective**

**Seyed Sadredin  
Executive Director/APCO**

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# Overview

- **Current state of air quality**
- **The challenges ahead**
- **Next questions we need to answer**

# State of Air Quality Emissions Inventory

- Ozone and PM2.5 precursor emissions have been substantially reduced in the SJV

## Reductions, 1990-2005

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NOx Emissions Reductions	41%
ROG Emissions Reductions	40%
Directly Emitted PM10	13%
Directly Emitted PM2.5	10%

**Good News!**

# State of Air Quality – Ozone

## Ambient Concentrations, 1990-2005

- 1-hour ozone
  - Number of annual of exceedance days dropped 57% (3-yr average)
- 8-hour ozone
  - Number of annual of exceedance days dropped 16% (3-yr average)

Good News!

# State of Air Quality – PM10

## Ambient Concentrations, 1990-2005

- 1990-2005
  - 24-hr design value dropped 56%
  - Highest annual average concentration dropped 39%
- 2003-2005
  - No violations of the 24-hr and annual NAAQS
  - Attainment

Great News!

# State of Air Quality – PM2.5

## Ambient Concentrations, 1999-2004

- Monitoring began in 1999

### SJV's highest PM2.5 monitoring sites

	1999	2005
24-hr Standard	35-38 estimated exceedance days	12 estimated exceedance days
Annual Average	28 $\mu\text{g}/\text{m}^3$	20 $\mu\text{g}/\text{m}^3$

Good News!

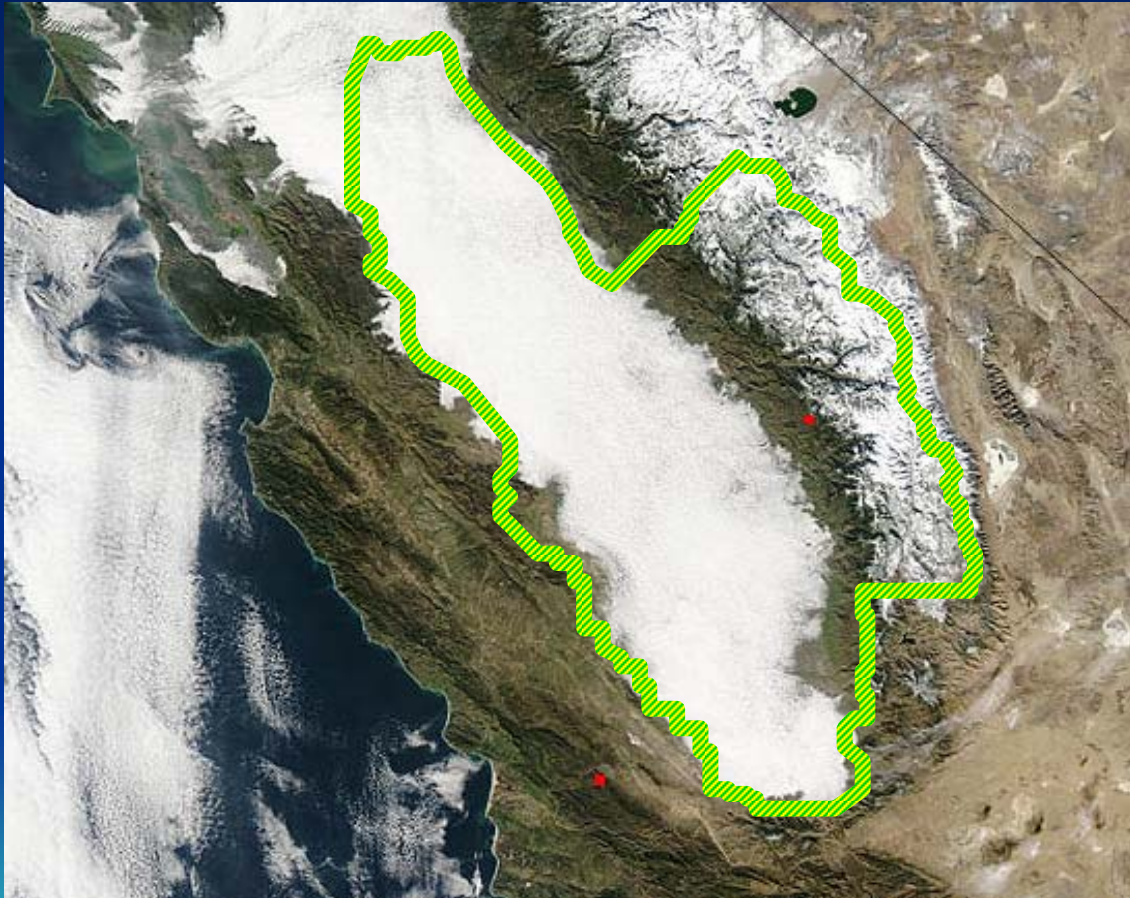
# **State of Air Quality**

## **Ambient Concentrations, 1990-2005**

- **8-hour ozone**
  - Large number of exceedance days
  - Design value has not significantly changed since 1990
- **PM2.5**
  - Most sites still violate annual PM2.5 standard

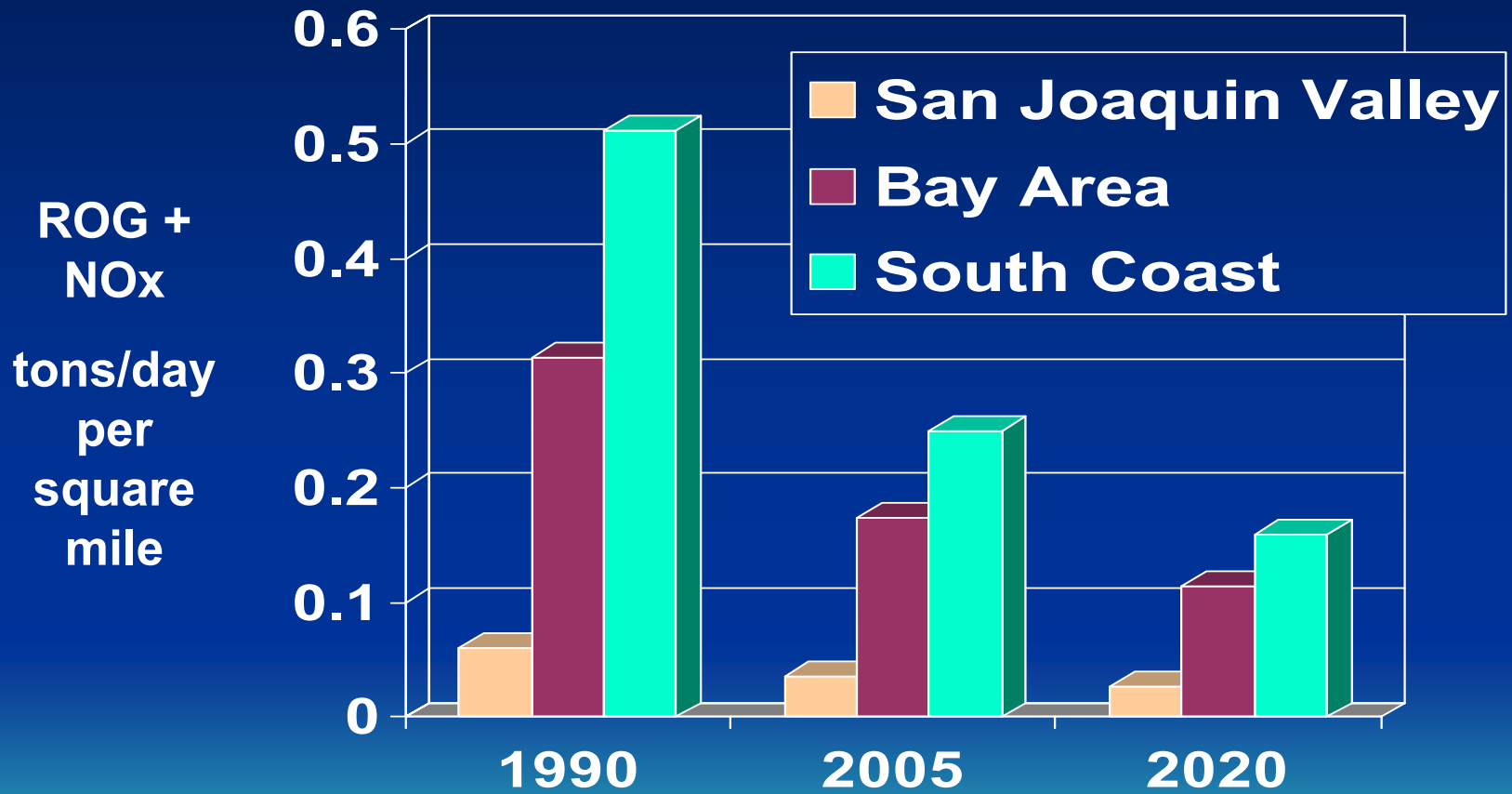
**A Long Way to Go**

# Why is the San Joaquin Valley Prone to Air Pollution?



- Topography and weather create ideal conditions for serious air pollution

# Emission Density



# Monumental Challenges Ahead

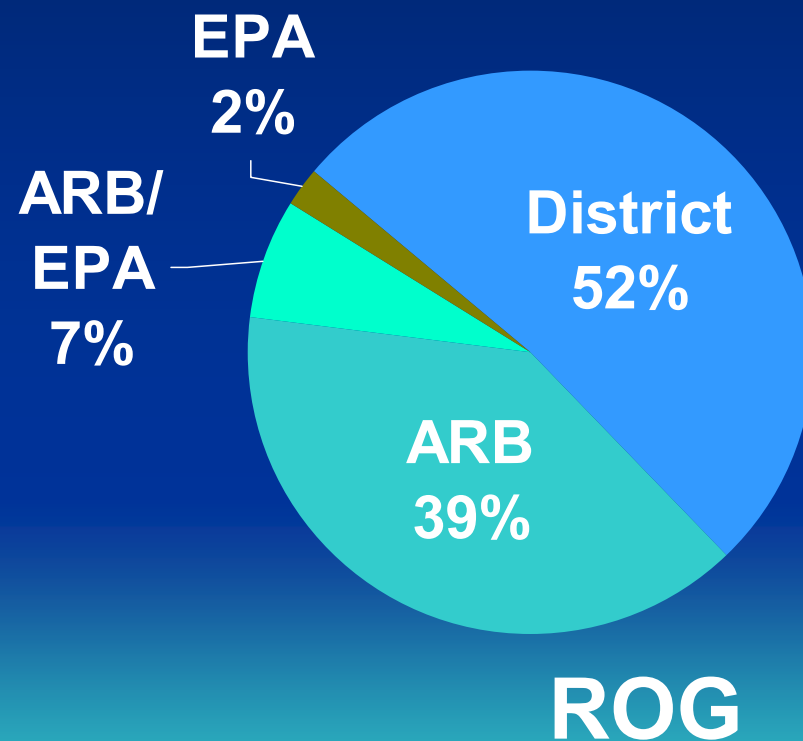
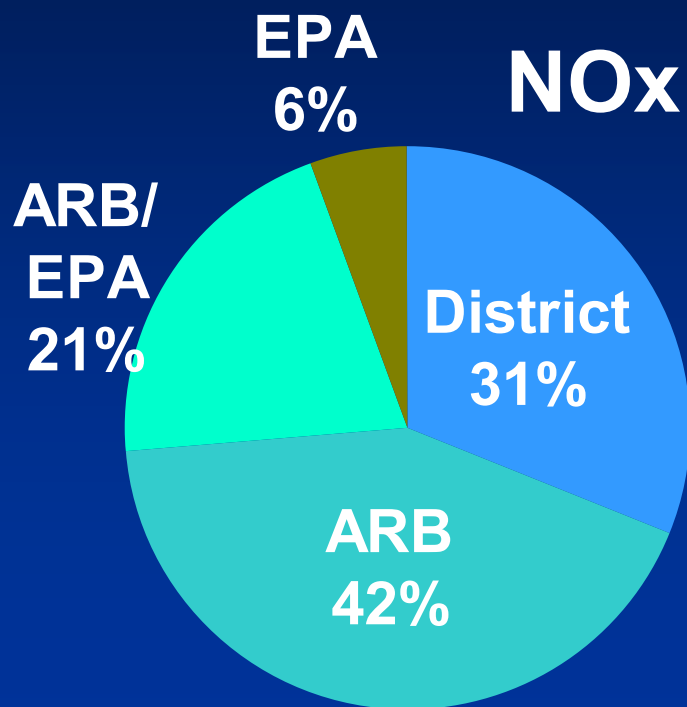
- 8-hr ozone and PM2.5 standards redefine healthy air and trigger new requirements and timelines

	<u>Plan Deadline</u>	<u>Attainment Deadline</u>
Ozone	6/15/2007	6/15/2013
PM2.5	4/5/2008	4/5/2010 (+5 yr extension.)

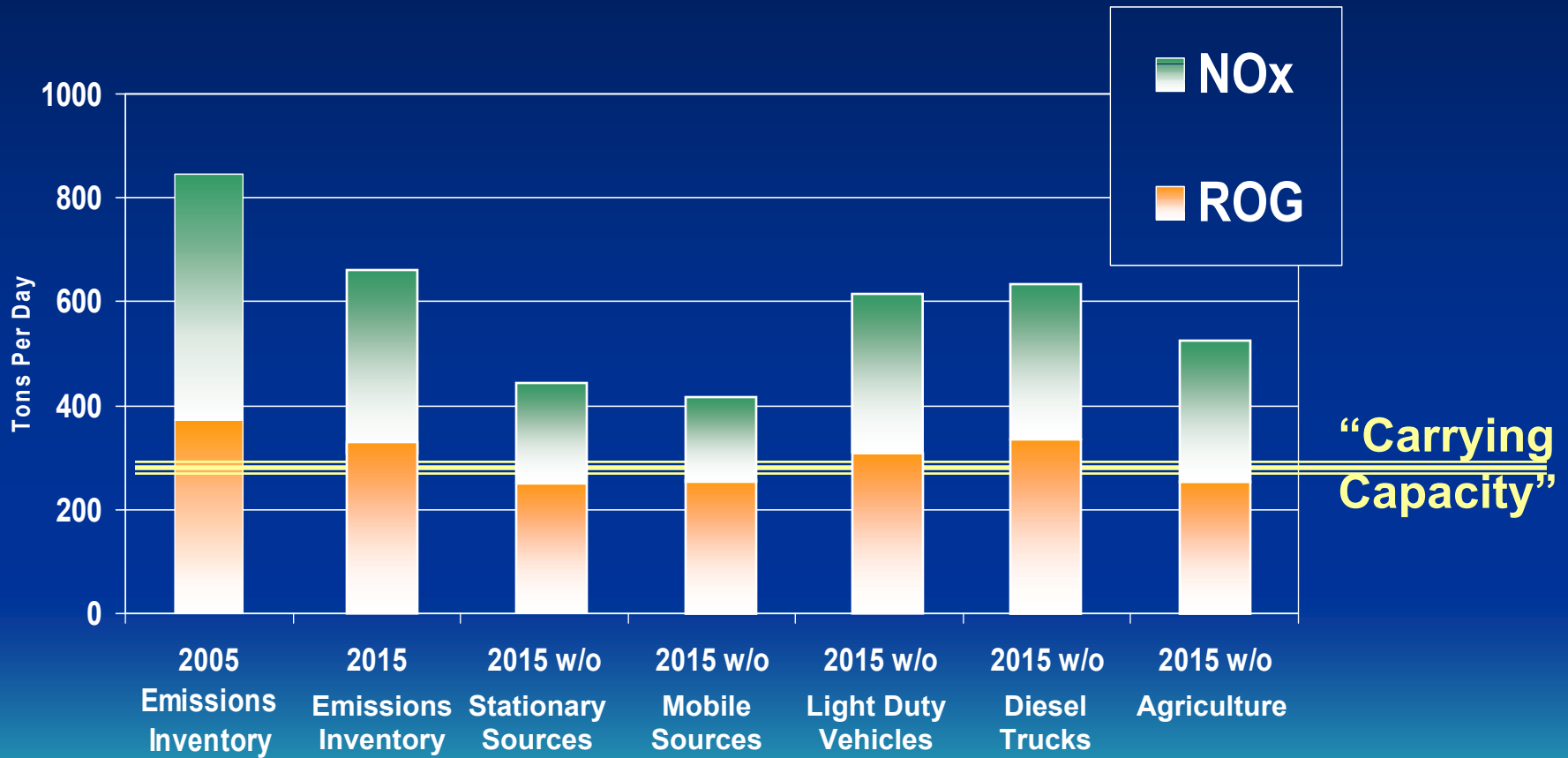
# Monumental Challenges Ahead

- Attainment may require 60% reduction in emissions (preliminary estimate)
- Several generations of rules already in place on most stationary sources
- New reductions will be costly but needed
- Need significant reductions in State and Federal Sources
- Overcoming emissions from population growth; need better land-use approach to reduce VMT

# Sources by Emission Control Jurisdiction



# 60% Reduction in Emissions: How Difficult?



# How Do We Get There?

## Strategy Issues

- How much reductions do we really need?
- Will strategies that were effective for 1-hour ozone work for 8-hour ozone?
- How can we integrate the PM and Ozone strategies?
- Can we refine our strategies to conserve resources?
  - Seasonal / episodic controls?
  - Sub-regional controls?
  - What pollutants?
  - Other innovative/new approaches?

# How Do We Get There?

## Timing Issues

- What level of reductions is possible with current and future technologies?
- How much time is needed to...
  - deploy current technologies
  - develop future technologies
- How rapidly can we attain...
  - Given that the rate of reductions of mobile source emissions is set by market-based attrition
  - Given that next generations of mobile source controls are not expected until significantly after 2010

# How Do We Get There?

## Known Needs

- Need better quantification of agricultural emissions and controls.
- Need accurate/reliable emissions inventory forecasts for mobile and other source categories.
- Need to stimulate & promote development of new and cost-effective control technologies.

